INDOT

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CONSULTANT NEWS BULLETIN 00-2
TABLE OF CONTENTS

Vertical Stopping Sight Distance (Supercedes article page 4, CSB 00-1) 1
Menus on Internet 1
Practice Pointers 1
Permit Conditions 3
Permit Reminders 3
Revision to Temporary Erosion and Sediment Control Guidelines 4
Regional General Corps Permit and 401 Water Quality Certification 4
Hamilton County Regulated Drain Crossing Permit 4
Spillslopes – Ohio River 4
Guidelines for Foundation Reviews 5
Temporary Guardrail End Treatments 5
Minimum Slab Overhang for Bridges with Deck Drains 5
Prestressed Concrete Design 5
K Values 6
Integral End Bents 6
Consultant Submissions 6
Cost Data on 3-sided Culverts and Oversize Box Culverts 7
Fish and Wildlife Review Procedure 7
Design Memo Search Index 7
Anne Rearick's Phone Number 7
TS2-Type 1 Controllers 7
Plan Changes after Contract Advertisement 8
Site Construction Approval of Wetland Mitigation Areas for Local Transportation Projects 8
Local Transportation Bridge Rehabilitation Projects 8
Design Manual Revisions 8

Vertical Stopping Sight Distance (Supercedes article page 4, CSB 00-1)

When the length of the vertical curve is equal to or greater than the stopping sight distance, a comparison of the K values (K required and K provided) will determine if the required stopping sight distance is provided.

When the length of the vertical curve is less than the stopping sight distance it is necessary to do the analysis by other means (for example, graphically or numerically).

(1) For passenger car stopping sight distance (Level 1) at a crest vertical curve place the "eye" 1070 mm above the pavement and the height of the object is 150 mm.

(2) For passenger car stopping sight distance (Level 1) at a sag vertical curve on a 4R project or project to be designed in accordance with Chapter 44, place the headlight at 600 mm above the pavement and the height of the object is 0 mm. The light beam is assumed at a 1° upward divergence from the longitudinal axis of the vehicle. The following equation may be used:

$$L = 2S - \frac{(120 + 3.5S)}{A}$$

See page 288 of the 1994 AASHTO "Metric Green Book".

The distance between the "eye" (for crest vertical curves) or the headlight (for sag vertical curves) and the object that is unobstructed (by the road, backslope of a cut section, guardrail, etc.) is the stopping sight distance provided. It is necessary to check it in both directions for 2-lane highways.

When the length of the vertical curve is less than the stopping sight distance and the stopping sight distance provided exceeds that required (even though the K provided is less than K required) the K value will be treated as a Level 3 item instead of Level 1.

Menus on Internet

The recurring special provisions menu and the standard drawings menus (English or metric) are available on the internet. They can be accessed from http://www.state.in.us/dot/info.htm. Use the version (depends upon the letting date) that is applicable to your contract.

Practice Pointers

1. Read the permits and take appropriate action (for example, include notes and a pay item for erosion control blankets when required by a permit) to make the plans, specifications, and estimate consistent with the permit conditions.

2. For projects designed using English units even though the pay items for asphalt are "metric" the rate must be in English. For example, show 140 lb/SYS (Do not show 75 kg/m^2.) HMA Surface 9.5 mm, Mainline.

3. Use 900 mm for the berm width on metric projects.

4. Short gaps (less than approximately 60 m) between barrier installations should be avoided, particularly when the cost of the additional barrier is about the same as the cost to install two separate end anchors, and access behind the rail for maintenance or other purposes is not required. See 1996 Roadside Design Guide (5.6.1).

5. It is acceptable to use prestressed concrete box beams on state highways, including interstates. When using adjacent box beams the designer must provide an effective shear keyway or transversely post-tension the beams. If the cost of a prestressed concrete I-beam structure is close to the cost of a prestressed concrete box beam structure INDOT prefers the I-beam. Do not use prestressed concrete box beams if the skew is more than 30°.

6. Shims are to be included on all steel bridge projects.

7. Consultants are to submit full-size plan sheets for review, unless the reviewer requests otherwise.

8. The gross length and net length to show on the Title Sheet are the lengths along the mainline (Do not include any length along S lines.).

9. A subsurface investigation summary is to be included in the contract proposal documents. See Technical Advisory 99-11.

10. In general, design open channel ditches (including pipes under driveways) for Q10. See 30-3.03(01) (especially items 2 and 3).

11. Use “clouds” for plan revisions. See page 2 of Consultant Newsletter 00-1.

12. When the depth of riprap is to be 18 inches on a metric project use 450 mm for the depth.

13. When a concrete beam bridge has an expansion joint at the end bent use a partial depth diaphragm.

14. Prior to submitting Tracings, the designer is responsible for contacting the Records Unit (David Cohen – 317-232-5344) to obtain the contract number, if one hasn’t already been assigned.

15. Generally, use 1.0 m (0.43 m for guardrail + 0.57 behind guardrail) from face of guardrail to shoulder break point.

16. Do not show a structure length on the Title Sheet unless you have a bridge within the project limits.

17. If the design year AADT exceeds 1,000 do not use a Type I guardrail end treatment. See Design Memo 00-02.

18. Don’t use revetment riprap within the clear zone on 4R projects or within the obstruction free zone on 3R projects. See 49-3.02(02), 55-5.03 (01) item 2, and 616.04.

19. Whenever you have seeding items as part of a contract, the following pay item must be included: 621-01004, Mobilization and Demobilization for Seeding, each.

20. When filling out the utility coordination status question on the Memorandum to Contracts Services Section form, if you do not have responsibility for utility coordination contact the person who is responsible in the Utility Unit. You should not contact the utility companies for this information if you are not responsible for the coordination.

21. When showing utility facilities on plans use the symbols shown in the old road design manual until Chapter 15 is available for the new manual.

22. Within one week after receipt, the designer shall review the plans and proposal book for each contract for which the designer is signing and sealing some or all of the plan sheets. The designer shall complete the Contract Proposal Book Certification form and return it to the Project Coordinator. The certification form may be found at www.ai.org/dot/design/consult.htm.

Permit Conditions

If a condition is not in a permit, it is not needed even if it is listed in the environmental document (Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement) and/or the Fish and Wildlife Review. The exception to this statement is all conditions with respect to the Endangered Species Act (for example, the tree cutting restriction for the Indiana bat).

This supercedes the guidance given in Practice Pointer No. 9 in CSB 99-1 dated June 1999. This revised procedure does not apply to woody revegetation requirements which are provided as determined by the INDOT Landscape Architect.

Permit Reminders

1. Designers are to submit copies of all permits when the final special provisions are submitted at final tracings stage. Please ensure that the copies are single sided. Furnishing duplex copies has occasionally resulted in missing pages in the contract document.

2. If the final special provisions are turned in before all of the approved permits are available, it is the designer's responsibility to ensure that copies are furnished to the Contracts Section after the approved permits are received.

3. Revisions are often made to the erosion control plans and summary tables after final tracings are submitted. It is the designer's responsibility to initiate plan and contract revisions for all changes that arise during the Rule 5 approval process. Plan revisions and construction changes must be processed in accordance with section 14-1.02 (04) and 14-1.02 (05) respectively.

Revision to Temporary Erosion and Sediment Control Guidelines

An article was published in Consultant News Bulletin No. 00-1 (page 7) regarding this subject. Item III.a is revised to read as follows:

> Generally, use riprap check dams outside the construction clear zone. See Chapter 82. It is acceptable to use straw bales as ditch checks within the construction clear zone. Silt fence check dams are not acceptable.

Item III.g is added:

> An interceptor ditch and a slope drain should be provided when the fill height exceeds 3 m. See 205-TECS-01, 205-TECS-02, 205-TECS-03 regarding diameter of slope drain pipe and maximum drainage area per pipe. Designers are frequently omitting this item from erosion control plans.

Regional General Corps Permit and 401 Water Quality Certification

The Corps, in cooperation with IDEM, has issued a Regional General Permit (RGP) in Indiana to authorize minimal impact activities. What this means to us is that, for projects that: 1) involve filling of 0.10 acre or less of "waters of the United States", including wetlands, and 2) impact less than 300' of stream channel, and 3) involve no channel relocation, no individual Section 401 Water Quality Certification (WQC) from IDEM will be required. In these cases only a one-page notification form with a USGS map indicating the project location is required.

For projects that involve filling of 0.10 acre up to 1.0 acre of "waters of the United States", including wetlands, a standard Section 401 application form (#48598) will be used to initiate the WQC review process and to provide notification to the Corps.

The RGP issued February 11, 2000, will be in effect for 5years. The IDEM permit notice along with links to the new form, the Corps permit notice, and the current individual permit application form may be found at www.state.in.us/idem/owm/planbr/401/RGP.html.

Hamilton County Regulated Drain Crossing Permit

Projects affecting regulated drains in Hamilton County require approval of the Hamilton County Surveyors Office. A copy of their crossing request application is available at www.co.hamilton.in.us.

Spillslopes – Ohio River

If a bridge is within the backwater of the Ohio River use 3:1 spillslopes, instead of 2:1. This is from the draft chapter 59–1.03 item 2 of the Design Manual.

Guidelines for Foundation Reviews

In consultant news bulletin 00-1 we published Guidelines for Foundation Reviews. The first sentence of the first paragraph is changed to read as follows:

> A Foundation Review is to be conducted by the design engineer on: 1) all bridge replacement or new bridge construction projects (including box culverts that are bridges), and 2) all 3-sided culverts (even those that technically are not bridges).

The revised guidelines may be found at www.ai.org/dot/design/consult.htm.

Temporary Guardrail End Treatments

To determine the appropriate temporary guardrail end treatment, the designer should follow 82-4.02(03) (especially item 4) and Design Memorandum 00-02 (49-5.04(01)). The construction year AADT should be used when determining which temporary end treatment to use.

Minimum Slab Overhang for Bridges with Deck Drains

If there are Type OS drains on beam or girder structures the minimum slab overhang shall be 550 mm plus ½ the flange width. Deck drains should always be checked to verify that they clear the top flange.

Prestressed Concrete Design

1. The designer is directed to design in accordance to the AASHTO Standard Specifications 9.15. Further, it is considered good practice to take advantage of the allowable values. In the typical design, the allowable tension of service loads will control. The designer is encouraged to approach the allowable of $6\sqrt{f'c}$ and generally should not go below $4\sqrt{f'c}$. Do not include unnecessary strands in the prestressed beam design.

2. The total allowable percentage of debonded strands for bulb-tee beams is 25% (reduced from INDOT practice of 50%). The total allowable percentage of debonded strands for AASHTO I-beams is 50%, provided the shear resistance in the region is thoroughly investigated with due regard to the reduction in horizontal force available when considering the free body diagram in Figure C5.8.3.5-1 and to all other determinations of shear capacity by any of the provisions of this section. (See C5.11.4.3 of the LRFD 2nd Ed.)

3. Draped strands shall only be considered with the use of bulb-tee beams, and should only be considered when required by the design which should include exceeding the maximum allowable design values using the maximum allowable design compressive strength, maximum allowable debonding, and maximum allowable top strands. When draped strands are used, the maximum allowable per strand hold down force will be 17 KN (3.8 KIP), and a maximum total hold down force of 170 KN (38 KIP).

K Values

For beams on rockers and slide bearings use K=2.1
For expansion piers with beams on a single row of neoprene pads use K=1.5.
For semi-fixed (precast concrete beams) and fixed piers use K=1.2.
Use K=1.0 for the strong transverse direction.

Integral End Bents

In Consultant News Bulletin No. 00-1 (page 2) we announced a change in policy regarding integral end bents. INDOT desires to keep a data base of structures (excluding reinforced concrete slab bridges) with integral end bents and a skew greater than 30° but less than 45°. When submitting Tracings please provide the following information to Mr. John Jordan at 100 North Senate Avenue, Room N642, Indianapolis, IN 46204:

1. Structure number
2. Total length
3. Number of spans
4. Skew
5. Type of structure
   - A. Type I prestressed concrete I-beam
   - B. Type II prestressed concrete I-beam
   - C. Type III prestressed concrete I-beam
   - D. Type IV prestressed concrete I-beam
   - E. Bulb T prestressed concrete beam
   - F. Steel beam
   - G. Steel girder
   - H. Prestressed concrete box beam
   - I. Other-please describe

6. Was the approach slab connection shown in Appendix A of Consultant News Bulletin No. 00-1 used?
7. What is the thickness of the approach slab?

Consultant Submissions

Effective immediately consultants are to submit a completed Level One Design Criteria Checklist for the mainline, each S-line, and each maintenance of traffic phase (including supporting calculations) with each plan submission. Consultants are also to submit a completed Limited Review Certification for projects at final check prints and tracings stages. These forms can be found at www.ai.org/dot/design/consult.htm.

Please note that the Level One Design Criteria Checklist is an updated version of the one included in Chapter 40 of the Indiana Design Manual.

Cost Data on 3-sided Culverts and Oversize Box Culverts

Cost data on 3-sided culverts and oversize box culverts may be found at www.ai.org/dot/design/consult.htm.

Fish and Wildlife Review Procedure

The procedure for conducting Fish and Wildlife Reviews has been modified. A copy of the new procedure along with the updated version of the form is available at www.ai.org/dot/design/consult.htm. A brief summary of the changes that have been made to the procedure is as follows:

1. The applicability of when to conduct a Fish and Wildlife Review has been clarified for streams. A review is required for all projects that impact (1.) a solid blue line on the USGS quad map or (2.) an intermittent blue line with a crossing span of 6.1m (20 ft.) or greater. All projects impacting wetlands must continue to receive Fish and Wildlife Reviews.

2. The project designer now fills out the entire Fish and Wildlife Review form before it is submitted for review.

3. The Environmental Assessment Reviewer now signs the form after finding the content satisfactory.

4. The USFWS copy for projects in many northern counties of the state is now sent to the Warsaw office of the USFWS.

Design Memo Search Index

An MSAccess search index has been created to help find design memos, technical advisory memos, news bulletin articles, etc. The index is not guaranteed to be all-inclusive, and it may include some outdated memos, but it can be very helpful in finding policy and procedure information based on key words. The database file may be downloaded from www.ai.org/dot/design/consult.htm.

Anne Rearick's Phone Number

Anne Rearick's phone number is incorrectly listed in the 2000 INDOT phone book. The correct number is 233-5569.

TS2-Type 1 Controllers

All new traffic signal installations and modernizations that require new control cabinets shall specify TS2-Type 1 cabinet assemblies.

Plan Changes after Contract Advertisement

Changes to plans or contract documents after a contract has been advertised for letting should be coordinated with the district construction engineer so that bidders can be kept up to date on information which may affect their bids.

Site Construction Approval of Wetland Mitigation Areas for Local Transportation Projects

Do not reference INDOT wetland scientist, wetland biologist, or landscape architect, in contract special provisions as approving agent for wetlands under construction. These duties are the responsibility of the design firm or the agent of the county or city who will be monitoring these sites. Counties and cities are responsible for the five year monitoring of these mitigation areas and it is their responsibility to ensure the viability of the site for intended mitigation.

Local Transportation Bridge Rehabilitation Projects

All Local Transportation bridge rehabilitation projects should include a scour analysis with the subsequent counter measures included in the plans.

Design Manual Revisions

Paper revisions are currently being distributed to registered holders of the Design Manual. If you do not receive your copy of the revisions within the next two weeks please contact Bob Cales at rcales@indot.state.in.us.